Anthropology Department  
Fall 2009 Student Learning Outcomes (SLOs) Assessment

**Learning Outcome Statement:** In the Fall 2009 semester the Anthropology Department engaged in an in-depth exploration of the following student learning outcome:

- Students will demonstrate an understanding of humans in an evolutionary context using a scientific approach

**Means of Assessment and Criteria:** In support of the identified student learning outcome, Anthropology Department faculty developed the following means of assessment and criteria:

- A pre- and post-assessment instrument will be administered to students enrolled in Introduction to Physical Anthropology (ANTHRO-1) sections taught by full- and part-time faculty. The pre-assessment instrument will be administered at the beginning of the semester and the post-assessment instrument will be disseminated near the end of the course. We expect that student scores will improve by at least 15% between pre- and post-assessment.

Anthropology Department faculty identified four questions that demonstrated acquisition of the stated student learning outcome. Supported by the Office of Institutional Research, the Anthropology Department developed a scannable survey form that identified student name, unique student identifier, section number, date that the form was completed, and student responses to the four survey items.

Consistent with the stated means of assessment, pre-assessment forms were disseminated in eight lecture ANTHRO-1 sections during the fourth and fifth weeks of the Fall 2009 semester (September 14th through September 24th), reaching a potential audience of 380 students. Post-assessment forms were disseminated in the same eight sections in the 13th and 14th weeks of the Fall semester (November 16th through November 24th), reaching a potential audience of 354 students. In total, 325 valid pre-assessment forms were returned, an 85.5% response rate; 284 valid post-assessment forms were returned, an 80.2% response rate. Merging pre- and post-assessment data files, 246 students were identified who completed all pre- and post-assessment questions, allowing researchers the ability to generalize findings with a 95% confidence level (confidence interval ± 3.46).

**Summary of Evidence:** Table 1 provides a frequencies distribution of the number of items answered correctly at pre- and post-assessment. At pre-assessment, the mean number of items answered correctly was 2.70; at post-assessment, the mean number of items answered correctly was 3.46 (4 = all items answered correctly; 0 = no items answered correctly). This finding represents an improvement of 28.1% from pre- to post-assessment. Furthermore, the observed difference between pre-/post-assessment scores is statistically significant ($p \leq .000$). An examination of correlation ($r = .422; p \leq .000$) and effect size ($d = .91$) further suggest that a positive relationship exists between pre- and post-assessment scores and that observed differences are practically significant (i.e., not just an artifact of sample size (Cohen, 1977)).
Table 1

<table>
<thead>
<tr>
<th>Number of Questions Answered Correctly By Survey Respondents</th>
<th>Pre Assessment</th>
<th>Post Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>All Four Questions Answered Correctly</td>
<td>45</td>
<td>18.3</td>
</tr>
<tr>
<td>Three Questions Answered Correctly</td>
<td>119</td>
<td>48.4</td>
</tr>
<tr>
<td>Two Questions Answered Correctly</td>
<td>56</td>
<td>22.8</td>
</tr>
<tr>
<td>One Question Answered Correctly</td>
<td>15</td>
<td>6.1</td>
</tr>
<tr>
<td>No Questions Answered Correctly</td>
<td>11</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Mean Number of Items Answered Correctly: 2.70, 3.46

Additional analyses were conducted for each survey item. For each of the four survey questions that demonstrated acquisition of the stated student learning outcome, Table 3 identifies the number and percentage of students who identified the correct response at pre- and post-assessment, as well as gain from pre- to post-assessment.

Table 3

<table>
<thead>
<tr>
<th>#</th>
<th>Survey Question</th>
<th>Pre Assessment Correct</th>
<th>Post Assessment Correct</th>
<th>Gain from Pre- to Post-Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>1</td>
<td>Biological evolution is best defined as: (correct response: change in allele frequency over time)</td>
<td>72</td>
<td>29.3</td>
<td>192</td>
</tr>
<tr>
<td>2</td>
<td>A scientific hypothesis is: (correct response: a testable explanation of observed facts)</td>
<td>170</td>
<td>69.1</td>
<td>192</td>
</tr>
<tr>
<td>3</td>
<td>Differences in human physical traits are best explained as: (correct response: adaptations to environmental conditions)</td>
<td>203</td>
<td>82.5</td>
<td>232</td>
</tr>
<tr>
<td>4</td>
<td>Human skin color variation: (correct answer: is the result of adaptation to environmental conditions (such as UV rays))</td>
<td>219</td>
<td>89.0</td>
<td>236</td>
</tr>
</tbody>
</table>

Use of Results for Planning: As the examination of pre- and post-assessment mean scores indicates:

- a mean pre-/post-assessment score improvement of 28.1% was observed
- the observed difference between mean pre-/post-assessment scores is statistically significant
- a positive statistically significant correlation exists between pre- and post-assessment scores
- a large effect size was observed

As Table 3 indicates, an item-by-item analysis reveals that one question – question #1 – heavily influenced the observed outcome; less than 15% pre/post assessment score improvement was observed for each of the three remaining items. For two questions, this appears partly attributable to a “ceiling effect” (i.e., high mean pre-assessment scores limit the ability to demonstrate post-assessment gain or improvement due to the finite limits of the assessment instrument). Using Question #4 as an example, it is simply impossible to demonstrate 15% improvement when 89% of students identify the correct response at pre-assessment. The Anthropology Department might want to consider re-examining the assessment questions to determine whether they are the best measure of acquisition of the stated learning outcome, especially since over 70% of students are able to identify correct responses at the point of pre-assessment on three of the four questions. Additionally, the Anthropology Department might want to consider: a) developing new ANTHRO-1 student learning outcomes; and/or b) developing learning outcomes for other Anthropology courses.

Reference:
INSTRUCTIONS: This is an Anthropology Department survey. Please provide what you think is the best response to each of the following questions. Use a black ink pen, blue ink pen, or #2 pencil to "bubble-in" your responses.

1) Biological evolution is best defined as:
- inheritance of acquired characteristics
- change in allele frequency over time
- physical changes occurring over an individual's lifetime
- behavioral changes over time
- absence of changes in physical features

2) A scientific hypothesis is:
- the truth
- an explanation based upon a belief system
- a testable explanation of observed facts
- an explanation based on personal opinion
- a theory

3) Differences in human physical traits are best explained as:
- an indication that some groups are more intelligent than others
- evidence of racial ranking
- an indication that some groups of people are more primitive than others
- differences in food people eat
- adaptations to environmental conditions

4) Human skin color variation:
- has been linked to differences in intelligence
- has been linked to differences in athletic abilities
- is the result of adaptation to environmental conditions (such as UV rays)
- has been linked to diet and Vitamin K levels
- has been linked to specific blood types